

CLAIMS

What is claimed is:

1. A method for producing a pine cone extract, comprising the steps of:

- a) heat extracting of defatted ground pine cone material with an aqueous solvent comprising potassium hydroxide;
- b) removing particulate matter with an average particle size greater than $0.2 \mu\text{m}$ leaving a supernatant;
- c) adjusting the pH of the resulting supernatant to between 6.0 and 8.0,

characterized in that the method further comprises the steps of:

- d) filtrating the supernatant to obtain a retentate fraction;
- e) drawing off the retentate fraction and removing particles with an average molecular mass of less than 30 kDa; and
- f) suspending the retentate fraction in an aqueous solvent comprising potassium hydroxide at a pH between 6.0 and 8.0.

2. A pine cone extract produced by a method of claim 1.
3. A system for vaccination and/or therapy, consisting of a composition or a kit comprising a) a vaccine or medicament and b) an adjuvant, wherein the adjuvant comprises a pine cone extract.
4. The system of claim 3, wherein the vaccine or medicament is a nucleic acid vaccine or medicament.
5. The system of claim 3, wherein the pine cone extract comprises a pine cone extract produced by a method comprising the steps of:
 - a) heat extracting of defatted ground pine cone material with an aqueous solvent comprising potassium hydroxide;
 - b) removing particulate matter with an average particle size greater than 0.2 μm and leaving an aqueous solution; and
 - c) adjusting the pH of the resulting aqueous solution to between 6.0 and 8.0.
6. The system of claim 5, wherein the pine cone extract comprises a pine cone extract produced by a method comprising the steps of:

e) heat extracting of defatted ground pine cone material with an aqueous solvent comprising potassium hydroxide;

f) removing particulate matter with an average particle size greater than $0.2 \mu\text{m}$ leaving a supernatant;

g) adjusting the pH of the resulting supernatant to between 6.0 and 8.0,

characterized in that the method further comprises the steps of:

h) filtrating the supernatant to obtain a retentate fraction;

e) drawing off the retentate fraction and removing particles with an average molecular mass of less than 30 kDa; and

f) suspending the retentate fraction in an aqueous solvent comprising potassium hydroxide at a pH between 6.0 and 8.0.

7. A method of vaccinating or treating a vertebrate, comprising the steps of:

a) administering to the vertebrate a vaccine or medicament; and

- b) administering to the vertebrate a pine cone extract.
- 8. The method of claim 7, wherein the vaccine or medicament comprises a nucleic acid vaccine or medicament.
- 9. The method of claim 7, wherein the pine cone extract comprises a pine cone extract produced by a method comprising the steps of:
 - d) heat extracting of defatted ground pine cone material with an aqueous solvent comprising potassium hydroxide;
 - e) removing particulate matter with an average particle size greater than 0.2 μm leaving a supernatant; and
 - f) adjusting the pH of the resulting supernatant to between 6.0 and 8.0.
- 10. The method of claim 7, wherein the pine cone extract comprises a pine cone extract of claim 2.
- 11. The method of claim 7, wherein the pine cone extract is administered orally, by intramuscular injection, by inhalation or by application on mucosal skin.

12. The method of claim 7, wherein the vertebrate is vaccinated or treated against cancer and/or viral infection.
13. The method for producing immature and/or mature dendritic and/or fibrocyte cells, comprising exposing cells selected from the group of blood mononuclear cells, thymocytes, splenocytes, umbilical cord blood cells, bone marrow cells, CD34⁺-cells, CD14⁺-cells or mixtures thereof to an effective amount of a pine cone extract.
14. The method of claim 13, further comprising exposing the selected cells or selected mixture to CD3⁺-cells.
15. The method of claim 13, wherein the pine cone extract comprises an extract produced by a method comprising the steps of:
 - a) heat extracting of defatted ground pine cone material with an aqueous solvent comprising potassium hydroxide;
 - b) removing particulate matter with an average particle size greater than 0.2 μm and leaving an aqueous solution;
 - c) adjusting the pH of the resulting aqueous solution to between 6.0 and 8.0.

16. The method of claim 15, wherein the pine cone extract comprises a pine cone extract produced by a method comprising the steps of:

i) heat extracting of defatted ground pine cone material with an aqueous solvent comprising potassium hydroxide;

j) removing particulate matter with an average particle size greater than 0.2 μm leaving a supernatant;

k) adjusting the pH of the resulting supernatant to between 6.0 and 8.0,

characterized in that the method further comprises the steps of:

l) filtrating the supernatant to obtain a retentate fraction;

e) drawing off the retenate fraction and removing particles with an average molecular mass of less than 30 kDa; and

f) suspending the retenate fraction in an aqueous solvent comprising potassium hydroxide at a pH between 6.0 and 8.0.

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